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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/663,366	09/15/2003	Ronald Kuse	10559/858001/P17306/Intel	1642
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FISH & RICHARDSON, PC P.O. BOX 1022 MINNEAPOLIS, MN 55440-1022			EXAMINER BUEKER, RICHARD R	
			ART UNIT	PAPER NUMBER
			1763	
			MAIL DATE	DELIVERY MODE
			09/05/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/663,366

Applicant(s)

KUSE, RONALD

Examiner

Richard Bueker

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 June 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 and 23-40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 and 23-40 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-6, 23, 24 and 31-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lindfors (2003/0075925) taken in view of Sandhu (2003/0072875), Tuominen (2003/0232138) and Kesala (2001/0042523). Lindfors (see Fig. 4) discloses a chemical reactant delivery system for use in semiconductor processing comprising an interior container 80 that is a boat configured to hold a liquid or solid source of gas. The boat is inside a metal chamber 30 which is heated to vaporize the source to produce the gas. Murray (5,168,543) is cited of interest for his teaching (see col. 5, lines 48-54, for example) that a metal vaporizer container changes volume by thermal expansion when it is heated. This is an inherent property of any metal chamber, including the metal chamber 30 of Lindfors. Therefore, Lindfors's chamber 30 is inherently a "variable volume chamber" as claimed by applicant. Sandhu discloses a vaporizer of the same type as that of Lindfors. Sandhu teaches that a desirably controllable vapor flow rate can be produced by providing a pressure detector 178 (see Fig. 5) and a pressure controller 146 in communication with the pressure detector and the vaporization chamber 102. The pressure detector controls the heater 110 and the carrier gas supply valve 158 to control the pressure inside the chamber 102. It would have been obvious to one skilled in the art to control the vaporizer apparatus of Lindfors by providing it with a pressure sensor and pressure controller of the type

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taught by Sandhu, because Sandhu teaches that his control means provides a desirably controllable rate. Regarding applicant's claimed limitation of "the pressure controller to apply a force to the variable volume container based on the output of the pressure detector", it is noted that pressure is a force and Sandhu's controller increases the pressure force on the chamber whenever it increases the temperature of the chamber or increases the flow of carrier gas into the chamber. Tuominen and Kesala disclose other examples of vaporizers of the same type as that of Lindfors. Tuominen (see paragraphs 27, 37 and 60) is cited in the rejection for his further description of the interior container. Tuominen (see paragraph 60) describes the interior container as being a source boat, and it is at least obvious that Lindfors's interior container can be a boat. Also, Kesala is cited for his teaching (see paragraph 54) that the operational temperature range of a vapor source of the type disclosed by Lindfors is 20° C to 400° C., which is a temperature range that would inherently cause a metal chamber to have a variable volume due to thermal expansion. Further regarding the claimed "variable volume chamber", it is noted that Sandhu (see paragraphs 5 and 29, for example) teaches that the volume of source material in the vaporization chamber is variable, and for this reason the vaporization chamber of Sandhu can also be described as a "variable volume chamber".

Claims 7-12 and 25-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lindfors (2003/0075925) taken in view of Sandhu (2003/0072875), Tuominen (2003/0232138) and Kesala (2001/0042523) for the reasons stated above, and taken in further view of Murray (5,168,543) (see col. 5, lines 48-54, for example)

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who teaches that a metal vaporizer container changes volume by thermal expansion when it is heated. Murray teaches that it is desirable to provide a bellows structure for a metal vaporizer container to accommodate the thermal expansion. It would have been obvious to one skilled in the art to provide the metal container of Lindfors with a bellows structure to accommodate the expected thermal expansion due to temperature cycling as taught by Murray.

Claims 15 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lindfors (2003/0075925) taken in view of Sandhu (2003/0072875), Tuominen (2003/0232138) and Kesala (2001/0042523) for the reasons stated above, and taken in further view of (Ohnishi (5,186,120) or Mardian (6,787,463). Ohnishi (see Fig. 1) teaches that it is desirable to use two vaporizers together in the same system, and in view of Ohnishi it would have been obvious to use two vaporizers of the type disclosed by Lindfors in a single system. Also, Mardian teaches that it is desirable to provide a further variable volume chamber in combination with a vapor source to further increase the controllability of a vapor flow to a process chamber. It would have been obvious to provide a variable volume chamber of the type taught by Mardian in combination with a vaporizer of the type disclosed by Sandhu for the desirable purpose of further increasing the controllability of the vapor flow.

Claims 13, 14 and 29 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

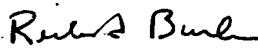
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The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Tomosawa (JP 06-232048) (see Figs. 1 and 2) is cited of interest to illustrate the use of a boat in a CVD precursor vaporizer.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard Bueker whose telephone number is (571) 272-1431. The examiner can normally be reached on 9 AM - 5:30 PM, Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571) 272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Richard Bueker
Primary Examiner
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